

## Coast Guard, DHS

## § 28.370

(d) Explosion-proof and intrinsically safe equipment must meet the requirements of 46 CFR part 111, subpart 111.105.

(e) Metallic enclosures and frames of electrical equipment must be grounded.

(f) Each vessel with a nonmetallic hull must have a continuous, non-current carrying grounding conductor which connects together the enclosures and frames of electrical equipment and which connects metallic items such as engines, fuel tanks, and equipment enclosures to a common ground point.

(g) The equipment grounding conductor must be sized in accordance with section 250-95 of NFPA Standard 70.

### § 28.355 Main source of electrical power.

(a) *Applicability.* Each vessel that relies on electricity to power any of the following essential loads must have at least two electrical generators to supply these loads:

- (1) The propulsion system and its necessary auxiliaries and controls;
- (2) Interior lighting;
- (3) Steering systems;
- (4) Communication systems;
- (5) Navigation equipment and navigation lights;
- (6) Fire protection or detection equipment;
- (7) Bilge pumps; or
- (8) General alarm system.

(b) Each generator must be attached to an independent prime mover.

### § 28.360 Electrical distribution systems.

(a) Each electrical distribution system which has a neutral bus or conductor must have the neutral bus or conductor grounded.

(b) A grounded electrical distribution system must have only one connection to ground. This ground connection must be at the switchboard or, on a nonmetallic vessel, at the common ground point.

### § 28.365 Overcurrent protection and switched circuits.

(a) Each power source must be protected against overcurrent. Overcurrent devices for generators must be set

at a value not exceeding 115 percent of the generator full load rating.

(b) Except for a steering circuit, each circuit must be protected against both overload and short circuit. Each overcurrent device in a steering system power and control circuit must provide short circuit protection only.

(c) Each ungrounded current carrying conductor must be protected in accordance with its current carrying capacity by a circuit breaker or fuse at the connection to the switchboard or distribution panel bus.

(d) Each circuit breaker and each switch must simultaneously open all ungrounded conductors.

(e) The grounded conductor of a circuit must not be disconnected by a switch or an overcurrent device unless all ungrounded conductors of the circuit are simultaneously disconnected.

(f) Navigation light circuits must be separate, switched circuits having fused disconnect switches or circuit breakers so that only the appropriate navigation lights can be switched on.

(g) A separate circuit with overcurrent protection at the main distribution panel or switchboard must be provided for each radio installation.

### § 28.370 Wiring methods and materials.

(a) All cable and wire must have insulated, stranded copper conductors of the appropriate size and voltage rating for the circuit.

(b) Each conductor must be No. 22 AWG or larger. Conductors in power and lighting circuits must be No. 14 AWG or larger. Conductors must be sized so that the voltage drop at the load terminals is not more than 10 percent.

(c) Cable and wiring not serving equipment in a high risk fire area such as a galley, laundry, or machinery space must be routed as far as practicable from these spaces. As far as practicable, cables serving duplicated essential equipment must be separated so that a casualty that affects one cable does not affect the other.

(d) Cable and wire for power and lighting circuits must:

- (1) For circuits of less than 50 volts, meet 33 CFR 183.425 and 183.430; and
- (2) For circuits of 50 volts or greater: